

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Revisions to Parts 2 and 25 of the)	IB Docket No. 12-376
Commission's Rules to Govern the Use of)	
Earth Stations Aboard Aircraft)	
Communicating with Fixed-Satellite)	
Service Geostationary-Orbit Space Stations)	
Operating in the 10.95-11.2 GHz, 11.45-)	
11.7 GHz, 11.7-12.2 GHz and 14.0-14.5)	
GHz Frequency Bands)	
)	
Service Rules and Procedures to Govern the)	IB Docket No. 05-20
Use of Aeronautical Mobile Satellite)	(proceeding terminated)
Service Earth Stations in Frequency Bands)	
Allocated to the Fixed Satellite Service)	

To: Office of the Secretary

**COMMENTS OF
THE SATELLITE INDUSTRY ASSOCIATION**

The Satellite Industry Association ("SIA")¹ hereby submits these comments in response to the Notice of Proposed Rule Making ("NPRM") accompanying the Commission's December

¹ SIA is a U.S.-based trade association providing worldwide representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers. Since its creation more than eighteen years ago, SIA has advocated for the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. For more information, visit www.sia.org.

SIA Executive Members include: Artel, LLC; The Boeing Company; The DIRECTV Group; EchoStar Satellite Services LLC; Harris CapRock Communications; Hughes Network Systems, LLC; Intelsat, S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; LightSquared; Lockheed Martin Corporation.; Northrop Grumman Corporation; Rockwell Collins Government Systems; SES S.A.; and SSL. SIA Associate Members include: AIS Engineering, Inc.; Astrium Services Government, Inc.; ATK Inc.; Cisco; Cobham SATCOM Land Systems; Comtech EF Data Corp.; DRS Technologies, Inc.; Encompass Government Solutions; Eutelsat, Inc.; Globecom Systems, Inc.; Glowlink Communications Technology, Inc.; Inmarsat, Inc.; ITT Exelis; Marshall Communications Corporation.; MTN Government

28, 2012 Report and Order (“Order”) authorizing Earth Stations Aboard Aircraft (“ESAA”) as an application of the Fixed Satellite Service (“FSS”).² SIA applauds the Commission for bringing greater certainty to the FSS market by resolving this longstanding matter and believes that the ESAA rules will provide for greater investment in the growing in-flight broadband industry.³ As the Commission has tentatively concluded in the NPRM, however, to fully unlock the potential of ESAA service, ESAA must be afforded full primary status and regulatory parity with other FSS services in the 14.0-14.5 GHz uplink band.

With the adoption of service rules and primary status allocations for Earth Stations on Vessels (“ESV”) and Vehicle Mounted Earth Station (“VMES”) services in the 14.0-14.5 GHz band, regulatory parity and effective coordination demand co-primary status between these complementary services. Satellite-based in-flight broadband services in the FSS bands have operated for more than a decade without causing any more interference or requiring any more protection from interference than existing FSS services. Accordingly, primary status for ESAA is appropriate based on the demonstrated operational history as well as the projected future growth of ESAA, and is vital to the continued innovation and competitiveness of the United States satellite communication and aerospace industries. SIA therefore strongly supports the

Services; NewSat America, Inc.; O3b Networks; Orbital Sciences Corporation; Panasonic Avionics Corporation; Spacecom, Ltd.; Row 44; Spacenet Inc.; TeleCommunication Systems, Inc.; Telesat Canada; The SI Organization, Inc.; TrustComm, Inc.; Ultisat, Inc.; ViaSat, Inc., and XTAR, LLC.

² *In the Matter of Revisions to Parts 2 and 25 of the Commission’s Rules to Govern the Use of Earth Stations Aboard Aircraft Communicating with Fixed-Satellite Service Geostationary-Orbit Space Stations Operating in the 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz and 14.0-14.5 GHz Frequency Bands*, IB Docket No. 12-267, Notice of Proposed Rulemaking and Report and Order, FCC 12-161 (rel. Dec. 28, 2012)(“ESAA Order” or “NPRM”).

³ SIA notes that several small changes to the rules have been requested in order to best effectuate the Commission’s intent for the ESAA service. *See* Petition for Reconsideration of the Boeing Company, IB Docket No. 12-376 (filed Jan 28, 2013).

Commission's proposal to elevate the ESAA service to primary status in the 14.0-14.5 GHz (Earth-to-space) band, consistent with the status of ESV and VMES operating in the same spectrum.⁴

I. PRIMARY STATUS WILL ENCOURAGE EXPANDED INVESTMENT AND USE OF ESAA

The satellite industry has been a pioneer in developing the technologies to bring broadband to aircraft. Mobile satellite service ("MSS") providers have been providing satellite-based data communications to aircraft for many years. More than a decade ago, Boeing introduced its Connexion by Boeing service – an innovative broadband Internet service for passengers on commercial aircraft using the FSS frequencies. In 2003, it filed a petition for rulemaking that led to the ESAA Order released last year.⁵ Several other firms offering broadband to aircraft using the FSS frequencies have entered the market in the intervening years, including SIA members Viasat, Row44, and Panasonic.⁶ All of this has been achieved through the application of new technologies within the two-degree spacing environment established by the Commission for traditional FSS, and previously extended to ESV and VMES services. The Commission should continue to support this market-driven development of broadband on aircraft by providing ESAA with the increased regulatory and operational certainty of full primary status, just as it has done for the ESV and VMES services.

⁴ ESAA Order, ¶ 142.

⁵ *Boeing Company Application for Blanket Authority to Operate Up to Eight Hundred Technically Identical Transmit and Receive Mobile Earth Stations Aboard Aircraft in the 14.0-14.5 GHz and 11.7-12.2 GHz Frequency Bands*, Order and Authorization, 16 FCC Rcd 22645 (2001) ("Boeing Transmit-Receive Order").

⁶ ESAA Order, ¶ 9 n.8.

In allocating primary status in the 11.7-12.2 GHz band, the Commission concluded that “granting ESAA a definitive level of protection will provide certainty as to the technical requirements for ESAA systems.”⁷ The same rationale applies to the 14.0-14.5 GHz band. Certainty as to the technical requirements and regulatory status of ESAA will provide increased assurance to investors in this growing industry. The Commission has cited the industry growth as one justification for primary status, noting that increasing adoption of ESV technology by the cruise ship industry and other customers on the high seas, coastlines, and water ways warranted additional protection.⁸ Here, mobility applications using the FSS frequencies, including earth stations on aircraft, is expected to be one of the fastest growing segments of the FSS market over the next decade.⁹ Full primary status will both protect existing deployments and encourage greater adoption.

In particular, the regulatory certainty afforded by full primary status will allow ESAA systems to offer increased capability, greater reliability, and ultimately to serve a larger role aboard the aircraft. Today, in-flight broadband is widely used to offer enhanced communication and entertainment to passengers, but it also makes possible new tools to assist flight crews with situational awareness and operational support. The Commission has recognized that in-flight broadband capability for crews “could enhance aircraft operations through real-time equipment

⁷ *Id.*, ¶ 17.

⁸ *Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and 14.0-14.5 GHz Bands*, IB Docket No. 02-10, Report and Order, FCC 06-286, 706, ¶ 4 (2005) (“*ESV Order*”).

⁹ NORTHERN SKY RESEARCH, GLOBAL ASSESSMENT OF SATELLITE SUPPLY AND DEMAND: REPORT BRIEFING 7-10 (9th ed. 2012), available at http://www.nsr.com/upload/research_reports/NSR_GASSD9_Brief.pdf (last visited May 22, 2013).

and supply information, weather updates, [and] security monitoring,”¹⁰ but these important capabilities presuppose reliable and uninterrupted two-way communication. The certainty and continuity afforded by primary status in the 14.0-14.5 GHz (earth-to-space) band as well as the 11.7-12.2 GHz (space-to-earth) band will validate current investment and encourage further investment in, and expanded use of, ESAA operations. The Commission should therefore promptly adopt such an allocation.

II. ESAA HAS OPERATED FOR MORE THAN A DECADE WITHOUT INTERFERENCE

ESAA networks operate within the same two-degree spacing framework as traditional FSS earth stations. In general, they are a source of no more interference than a traditional FSS earth station, and they require no additional protection. They can also be easily incorporated into well-established coordination processes among satellite operators. As the Commission acknowledges, “ESAA operations in this band, operating under technical constraints similar to those adopted in this order, have been ongoing for years with no reported instances of interference.”¹¹ As a result, ESAA systems have demonstrated a history of good engineering practices and coordination consistent with primary status.

The Commission has already concluded that a primary allocation for ESAA in the 11.7-12.2 GHz (space-to-earth) band would serve the public interest because ESAA systems have

¹⁰ *Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service*, IB Docket No. 05-20, Notice of Proposed Rulemaking, FCC 05-14, ¶ 2 (2005) (“AMSS NPRM”).

¹¹ *ESAA Order*, ¶ 24. Boeing has operated its Connexion AMSS system since 2001, demonstrating that AMSS systems and FSS operations can co-exist in the Ku-band without incidents of harmful interference into FSS operations.

operated without incident in that band.¹² The same is true in the 14.0-14.5 GHz (Earth-to-space) band. This should not be surprising as the Commission's new rules and past practice ensure that ESAA is effectively identical to traditional FSS earth stations from an interference perspective because they are subject to the same off-axis EIRP density masks, require no additional protection, and are subject to the same coordination processes. These public interest considerations justify establishing ESAA as a primary status service in the 14.0-14.5 GHz band as well.

III. REGULATORY PARITY IS APPROPRIATE FOR SIMILAR SERVICES OPERATING IN THE SAME SPECTRUM

In the ESAA Order, the Commission recognized that “ESAA is the ‘third leg’ of mobile applications in the FSS.”¹³ The Commission therefore chose the ESAA moniker to “convey the technical and regulatory similarities to ESV and VMES.”¹⁴ In developing the rules for mobile applications of the FSS, the Commission has explicitly modeled the rules for later-adopted services on those of earlier services, including allocation of the 14.0-14.5 GHz uplink spectrum for primary status.¹⁵ The adoption of ESAA rules continues this trend.¹⁶ It is therefore appropriate that ESAA be afforded full primary status commensurate with its role as the co-equal

¹² *Id.*, ¶ 16 (citing to string cite of authorized ESAA systems that have operated without incident in the 11.7-12.2 GHz downlink band).

¹³ *Id.*, ¶ 2.

¹⁴ *Id.*, ¶ 11.

¹⁵ *See Amendment of Parts 2 and 25 of the Commission's Rules to Allocate Spectrum and Adopt Service Rules and Procedures to Govern the Use of Vehicle-Mounted Earth Stations in Certain Frequency Bands Allocated to the Fixed-Satellite Service*, IB Docket No. 07-10, Report and Order, FCC 09-64, ¶ 2 (rel. July 31, 2009) (“*VMES Order*”) (stating that VMES rules were modeled on the ESV rules).

¹⁶ *ESAA Order*, ¶ 5 (acknowledging ESAA licensing rules as “consistent with those of ESV and VMES”).

third leg of the mobile FSS triad. This is entirely warranted because the Commission's rules for ESAA ensure that the interference profile of ESAA networks (just as in the case of ESV and VMES) will be effectively identical to the interference profile of traditional FSS earth stations. As previously noted, ESAA is subject to the same off-axis EIRP density limits, protection levels, and coordination process applicable to stationary FSS earth stations.

At the outset of this proceeding, some commenters found secondary status sufficient for ESAA operations. In the intervening decade, however, the subsequent increases in ESV deployment and the adoption of VMES rules have made it increasingly clear that co-primary status for all three services would best promote the effective use of ESAA and coordination with other primary FSS services. Satellite broadband today is often provided to ships, trucks, trains, and aircraft using the same hardware, satellites, transponder beams, and control stations. Indeed, some companies have operated ESAA and other services over the same transponder at the same time, using the same network.¹⁷ Given the numerous similarities in technology and use between ESV, VMES, and ESAA, full regulatory parity between these services is the logical and appropriate course.

IV. PRIMARY STATUS WOULD PROMOTE EFFECTIVE COORDINATION AMONG FSS SERVICES

As the Commission observed in the ESV Order, “inter-system coordination among FSS operators can be more readily accomplished if each service within the allocation is afforded primary status.”¹⁸ The Commission affirmed this conclusion when adopting its VMES rules, recognizing that primary status for VMES would be preferred for coordination purposes with

¹⁷ Letter from Bruce A. Olcott, Counsel, The Boeing Company, to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket 05-20 (Jan. 7, 2011).

¹⁸ *ESV Order*, ¶ 78.

ESVs and other primary FSS systems.¹⁹ The same holds true for the new and existing ESAA networks sharing the 14.0-14.5 GHz band with VMES, ESV and other primary FSS applications. Because the interference profile of ESAA under the Commission's rules will be effectively identical to other primary FSS applications, there is no basis for denying them the inter-system coordination benefits of primary status conferred on those other services.

V. NEW SECONDARY SERVICES SHOULD NOT BE CONSIDERED, IF AT ALL, AT LEAST UNTIL ESAA IS ESTABLISHED AS A PRIMARY SERVICE

On May 9, 2013, the Commission adopted a Notice of Proposed Rulemaking (the "Air-Ground NPRM") that considers the possible adoption of a secondary, terrestrial Air-to-Ground (ATG) service that would re-use satellite spectrum in the 14.0-14.5 GHz band by employing significantly different technical and operational parameters than traditional FSS earth stations and the existing mobile FSS triad of ESV, VMES, and ESAA.²⁰ The Air-Ground NPRM stems from a petition that was filed by Qualcomm seeking to authorize ATG service in the same 14.0-14.5 GHz band used extensively by the FSS.²¹

Leaving aside the technical concerns of the Qualcomm proposal for now, SIA would urge the Commission to confirm that ESAA is an FSS application entitled to primary status before it further explores a possible new secondary service in FSS spectrum. The Air-Ground NPRM

¹⁹ *VMES Order*, ¶ 8 ("[p]rimary status for VMES as an application of the FSS in the conventional Ku-band...means that VMES licensee can expect the same level of interference protection from adjacent satellite system operations as other primary FSS operators receive and, for coordination purposes, have the same status as other primary FSS systems.").

²⁰ *Expanding Access to Broadband and Encouraging Innovation through Establishment of an Air-Ground Mobile Broadband Secondary Service for Passengers Aboard Aircraft in the 14.0-14.5 GHz Band*, Notice of Proposed Rulemaking, FCC 13-66 (rel. May 9, 2013) ("Air-Ground NPRM").

²¹ Qualcomm Inc. Petition for Rulemaking at 20, Amendment Of The Commission's Rules To Establish A Next-Generation Air-Ground Communications Service On A Secondary Licensed Basis In The 14.0 to 14.5 GHz Band, RM RM-11640 (Jul. 7, 2011).

explicitly recognizes that protecting FSS in the 14.0-14.5 GHz band is “essential” because FSS capacity in that band is heavily used for a variety of critical services, including ESAA operations.²² That protection of ESAA services cannot be guaranteed, however, as long as ESAA remains secondary in the Earth-to-space direction. Therefore, in order to best establish a clear and coherent protection environment for FSS services, the Commission should at the very least elevate the ESAA allocation to primary status, consistent with ESV and VMES, prior to any further consideration of new secondary terrestrial services in FSS satellite spectrum.

Satellite industry members, including satellite operators, equipment manufacturers, and ESAA service providers, have invested billions of dollars in complex in-orbit communications satellites and associated ground systems. At least one satellite operator has begun to invest in new FSS satellites that are customized to serve the mobility market, including ESAA.²³ Likewise, airline customers are also making the investments necessary to retrofit thousands of aircraft with ESAA equipment. A primary allocation for ESAA in the 14.0-14.5 GHz band is therefore both appropriate and necessary to protect and encourage such investments.

VI. CONCLUSION

Affording full primary status for ESAA in the 14.0-14.5 GHz band is an important step in realizing the Commission’s goals of fostering innovation, investment and ubiquitous broadband deployment. In-flight broadband services via satellite have operated without incident for more than a decade under substantially similar rules as the ones adopted by the Commission in the

²² *Air-Ground NPRM* at ¶ 27.

²³ See Intelsat S.A., Press Release, *Panasonic Avionics Corporation Commits to Intelsat EpicNG Platform for Delivery of Consumer Broadband Services for Commercial Airlines*, available at <http://www.intelsat.com/news/panasonic-avionics-corporation-commits-to-intelsat-epicng-platform-for-delivery-of-consumer-broadband-services-for-commercial-airlines/> (last visited May 21, 2013).

ESAA Order, demonstrating that both ESAA technology and the ESAA rules are consistent with full primary status. The Commission should therefore complete this longstanding proceeding on satellite broadband on aircraft by promptly elevating ESAA in the 14.0-14.5 GHz band to full primary status.

Respectfully submitted

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May 22, 2013